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11 April 2018

Ex Parte

Marlene H. Dortch
Secretary, Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Amendment of Parts 2 and 25 of the Commission's Rules to Facilitate the Use of Earth Stations in Motion Communicating with Geostationary Orbit Space Stations in Frequency Bands Allocated to the Fixed Satellite Service, IB Docket No. 17-95

Dear Ms. Dortch:

In a series of increasingly extreme—and odd—letters to the Commission, ViaSat, Inc., Inmarsat, Inc., and SES Americom, Inc. again ask that earth stations in motion ("ESIMs") be permitted in the 29.25-29.3 GHz band segment that Iridium uses (and perhaps other NGSOs will use) for feeder links.[1] Given how bizarre their claims have been, Iridium wants briefly to correct the record.

The record is clear that ESIMs, transmitting in the 29.25-29.3 GHz band with the power required to reach geostationary satellites roughly 22,000 miles above the earth, will interfere with transmissions from Iridium's earth stations to its low-Earth orbiting satellites that are roughly 480 miles above the earth. It could not be otherwise.

Throughout this proceeding, these three ESIMs proponents have claimed that they could coordinate with Iridium to reduce the interference to acceptable levels by crafting an "exclusion zone" around each Iridium feeder-link earth station. They have, however, repeatedly failed to explain how this can be done.[2] In some sense, this is not their fault since the entire satellite industry has been unable to solve this problem over the past decade or so. When you have an unknown number of transmitting devices, in unknown locations, that are constantly in motion in three dimensions, there is no way to calculate how far away these devices must be to prevent

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1 Letter from Inmarsat, Inc., SES Americom, Inc., and Viasat, Inc. to Marlene H. Dortch, Secretary, FCC, IB Docket No. 17-95 (filed Apr. 3, 2018) ("April 3, 2018 Joint Ex Parte"); Letter from Viasat, Inc. to Marlene H. Dortch, Secretary, FCC, IB Docket No. 17-95 (filed Mar. 26, 2018) ("Viasat March 26, 2018 Ex Parte").

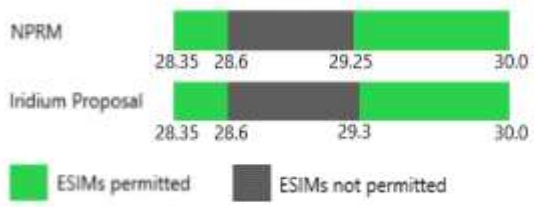
2 *See generally* Letter from Viasat, Inc. and Inmarsat, Inc.to Marlene H. Dortch, Secretary, FCC, IB Docket No. 17-95, at pp. 15-16 of Attachment (filed Nov. 7, 2017) ("Viasat/Inmarsat November 7, 2017 Ex Parte") (describing two interference simulations of 1) a few *fixed*—not mobile—ESIM terminals; and 2) just six ESIMs operating along made-up flight paths and transmitting just six percent of time). *See also* Letter from Iridium Communications, Inc. to Marlene H. Dortch, Secretary, FCC, IB Docket No. 17-95 (filed Jan. 18, 2018) ("Iridium January 18, 2018 Ex Parte") (explaining that these analyses do not actually model broadly deployed ESIM terminals, and drastically understate the interference problem).

harmful interference. While it remains possible that a solution will be found, that eureka moment has so far escaped ESIMs proponents.

Because of this presently insoluble problem, Iridium suggested that of the *2000 megahertz* the Commission proposes to make available for ESIMs, it eliminate the mere *50 megahertz* that would create interference problems for NGSO uplinks in the 29.25-29.3 GHz band. Given that this 50 megahertz represents only 2.5 percent of the total new spectrum to be made available for ESIMs, it is self-evident that eliminating this band from the proposal would have no material impact on ESIM services.

In response, one of the three ESIMs proponents claimed that this 50 megahertz was particularly significant because eliminating it from the proposal would create a "donut hole" that would break up contiguous spectrum.[3] But all of their previous filings had suggested that avoiding the 50 megahertz was not an issue because FSS operators would configure their systems to avoid this spectrum when entering an "exclusion zone" around each Iridium feeder-link earth station. Why this suddenly became a problem they did not say.

More importantly, ***the so-called "donut hole" does not exist.*** The *NPRM* proposed to allow ESIMs in the 28.35-28.6 GHz and 29.25-30.0 GHz uplink bands. As shown in the figure to the right, the 29.25-29.3 GHz band segment is at the absolute beginning of the 29.25-30.0 GHz uplink band—not in the middle. Moreover, the *NPRM* does not pick up again until 28.6 GHz, making it impossible for ESIMs operators to dip below 29.25 GHz when creating ESIM channels.[4] Thus, contrary to the claims of the ESIMs proponents, excluding the 29.25-29.3 GHz band would have no impact on the ability of operators to combine contiguous spectrum to "form larger ESIMs communications channel[s]."[5]



Perhaps recognizing that the "donut hole" argument made no sense, the three ESIMs proponents made an even more extreme argument. In their next filing, they bizarrely declared that the "record in this proceeding" shows there is no interference concern with Iridium's feeder links "across the United States."[6] Thus they claimed that the Commission not only should allow ESIMs to operate in the 29.25-29.3 GHz band, but also should exempt ESIMs from the rules requiring coordination that apply even to fixed terminals.

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3 Viasat March 26, 2018 Ex Parte at 1.

4 Indeed, the Commission's rules foreclose FSS terminals of *any* kind in the 29.1-29.25 GHz band. *See* 47 C.F.R. 2.106 at NG166 ("The use of the bands 19.4-19.6 GHz (space-to-Earth) and 29.1-29.25 GHz (Earth-to-space) by the fixed-satellite service is limited to feeder links for non-geostationary-satellite systems in the mobile-satellite service.").

5 Viasat March 26, 2018 Ex Parte at 1.

6 April 3, 2018 Joint Ex Parte at 1.

These ESIMs proponents seem to be hoping that the Commission will suffer collective amnesia about the technical record in this proceeding. Indeed, they said practically the opposite just last November, when they guessed that exclusion zones totaling 2.25 million square miles would be necessary to prevent interference into Iridium's feeder links.[7] How that estimate squares with an exemption from coordination requirements is never explained.

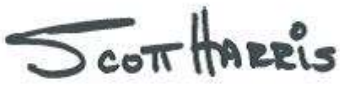
The record therefore leaves the Commission with two choices:

- Allow ESIMs in the 29.25-29.3 GHz band, shift the burden to the FCC to define exclusion zones in litigation over frequency coordination, and place Iridium's network at risk—all for just 2.5 percent (50 megahertz of a total 2000 megahertz) of the new ESIMs spectrum proposed by the Commission; **or**

- Proceed with an order that provides practically all (97.5 percent) of the new spectrum ESIMs proponents have sought, but that defers consideration of the 29.25-29.3 GHz band at this time.

To reiterate, the Commission can give ESIMs proponents 97.5 percent of what they have asked, with no risk to Iridium's co-primary operations, and with no risk of forcing the FCC to guess at coordination, by excluding the 29.25-29.3 GHz band from the ESIMs order. That outcome is the textbook definition of a win-win-win, the protestations of these three operators notwithstanding.

Sincerely,



Scott Blake Harris
Counsel to Iridium Communications, Inc.

[7] *See* Viasat/Inmarsat November 7, 2017 Ex Parte at pp. 15-16 of Attachment (estimating that even a small number of ESIMs transmitting from fixed locations would cause unacceptable interference into Iridium's network within 1.9 million square kilometers, or 750,000 square miles, of each Iridium feeder-link earth station). *See also* Iridium January 18, 2018 Ex Parte at 4-5 (explaining that in real life, Inmarsat's exclusion-zone estimates would be much larger, though no one could calculate the right size and shape because the location in time of all ESIMs remains unknowable).